

ASIAN THEMIRA (DIPTERA: SEPSIDAE): DESCRIPTIONS OF
TWO NEW SPECIES AND DISTRIBUTIONAL NOTES

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ABSTRACT—*Themira bifida*, from India, and *T. japonica*, from Japan, are described. The record of the occurrence of *T. annulipes* (Meigen) in India was found erroneous. *Themira nigricomis* (Meigen) is recorded as new to Asia, and the presence of *T. putris* (L.) there is confirmed. The subgeneric classification of *Themira* is discussed.

Very little is known of the taxonomy and distribution of the genus *Themira* Robineau-Desvoidy, 1830, in Asia. Moreover, some of the recorded information is based on misidentifications. Study of sepsid collections of the Department of Entomology, Zoological Museum of the University, Helsinki (ZMUH); Department of Entomology, British Museum (Natural History), London (BMNH); and Entomological Institute, Hokkaido University, Sapporo (EIHU) has made it possible to present descriptions of two new species and new distributional data on some other representatives of *Themira*.¹

Themira bifida Zuska, new species

Fig. 1-3, 11-14

♂ ♀. Small, black, moderately shiny species, 3.0 to 3.4 mm long. Head blackish, pentagonal in lateral aspect, with somewhat protruding frontal part. Frons black, rather dull and pruinose, with deeply black orbits if observed anterodorsally, with scattered minute hairs. Face brownish, slightly pruinose, with high facial carina. Peristoma brown, coated with silvery pruinosity, slightly narrower anteriorly than depth of third antennal segment but widening posteriorly, its lower margin almost straight. Occiput black, subshining, bearing rather long, scattered, dark hairs. Chaetotaxy: 1 *or* (rather long and strong), 1 *oc*, 1 *vti*, 1 *prt*, 7 or 8 peristomal bristles; *vte* vestigial but distinct. Antenna black, reaching below middle of frons; third segment barely longer than deep mesially; arista black, moderately thickened basally, distinctly pubescent.

Thorax black. Mesonotum rather densely pruinose, subshining, its sparse, long, black hairs arranged into acrostichal, dorsocentral, and intra-alar rows. Pleura extensively pruinose: mesopleuron almost without pruinosity, shining, bearing long scattered hairs; pteropleuron moderately pruinose except for its more shiny middle part; sternopleuron with stripe of dense silvery pruinosity along dorsal margin, otherwise shiny; hypopleuron strongly pruinose but with shiny spot in middle. Scutellum densely pruinose; postnotum with moderate pruinosity, subshining.

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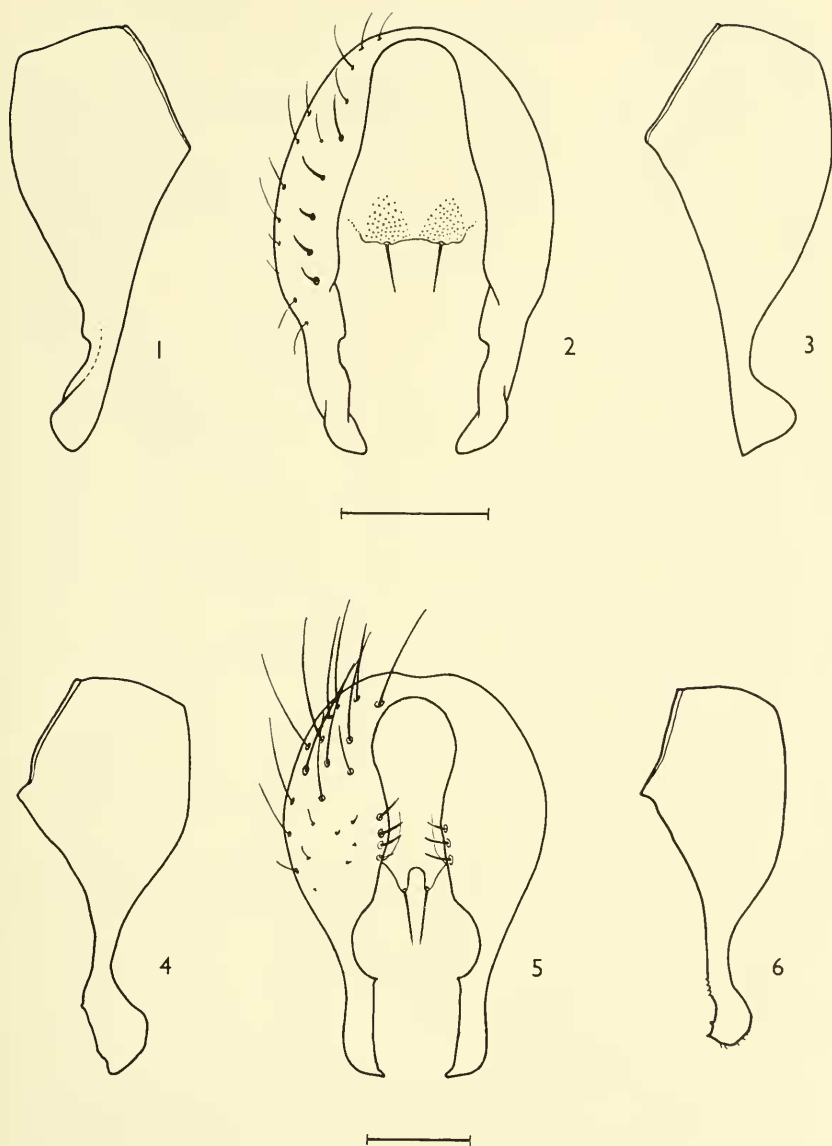


Fig. 1-3. *Themira bifida*. 1, right half of hypopygium, lateral view; 2, hypopygium and cerci, posterior view; 3, left half of hypopygium, lateral view. Fig. 4-5, *T. japonica*. 4, hypopygium, lateral view; 5, hypopygium and cerci, posterior view. Fig. 6, *T. leachi*, hypopygium, lateral view. Scale equals 0.2 mm.

Chaetotaxy: 1 *dc*, 1 *h* (long and strong), 2 *n* (anterior almost as long and strong as posterior), 1 *pal*, 1 *ap sc* (about twice as long as scutellum); *m*, *sal* and *la sc* lacking.

Legs, including coxae, entirely black. *Male*. Fore femur (fig. 13) ventrally with long pale hair basally and a few shorter pale hairs sub-basally, with characteristic bifid protuberance bearing 2 hairs just before middle and with sharp short spine behind middle; posteroventrally with 2 spines beside the bifid protuberance. Fore tibia (fig. 11 and 13) very slightly curved, thin proximally, slightly thickened distally, anteriorly in middle with large flaplike protuberance, with rather dense row of subequal bristles above it, and with long scattered hairs in distal $\frac{1}{2}$ on anterior and ventral surface. Fore tarsus not thickened, length ratio of tarsal segments 4.1 : 2.2 : 1.6 : 1.0 : 1:3. Middle tibia with rather long hairs ventrally, with 1 ventral bristle at $\frac{2}{3}$ of its length; otherwise middle leg without special structures. Hind femur with sparse erect hairs ventrally and posteriorly on proximal $\frac{1}{2}$, otherwise with normal pilosity except for anterodorsal bristle at $\frac{3}{5}$ of its length, which is longer than maximum depth of femur; hind tibia anterodorsally with an osmeterium in its distal $\frac{1}{2}$ which is about as long as proximal part of tibia above osmeterium and about twice as long as distal part of tibia below that; tibia in anterodorsal aspect almost straight, thin proximally and only moderately thickened in distal $\frac{3}{5}$, and there almost parallel-sided, apical $\frac{3}{5}$ with rather long suberect hairs ventrally and with row of curved suberect hairs dorsally, and with about 5 long erect pre-apical hairs exceeding in length maximum depth of tibia. No strong bristles on hind tibia. *Female*. Fore femur (fig. 14) with 2 long thin anterodorsal bristles, ventrally behind middle with 1 strong bristle and row of about 6 shorter and weaker bristles distal to this. Middle and hind tibiae without long, strong bristles other than apical or pre-apical ones.

Wings 3.0 to 3.5 mm long, hyaline, with dark venation and slightly tinged greyish. Alula with distinct posterodistal lobe, entirely covered with microtrichia. Halter yellow.

Abdomen black, shiny, without macrochaetae. *Male*: Abdominal sterna as in fig. 12, hypopygium assymetrical (fig. 1-3).

Holotype: Male from India: E. Punjab, Kangra District, Kulu, Dibibokri Nal, Runi Thach, 3,900 m, swept from grass, evening 8.vii. 1952; E.A.C.L.E. Schelpe collector; in BMNH.

Paratypes: A male (in the author's collection) and a female (in BMNH) labelled identically with the holotype.

Derivation of name: from the bifid protuberance on the fore femora of the male.

The newly described species belongs to the species-complex of *Themira* which is characterized by the presence of a humeral bristle, the sternopleuron partly or entirely without pruinosity, the comparatively simple fore legs in the male, the presence in most species of a pair of spines or bristles on the fifth abdominal sternum of the male, slight asymmetry of the surstyli, and by the row of ventral bristles on the proximal part of the fore tibia of the female. In addition to *T. bifida* n. sp., the following species seem to belong to this group: *T. gracilis* (Zetterstedt), 1847, *T. seticrus* Duda, 1926, *T. dampfi* Becker,

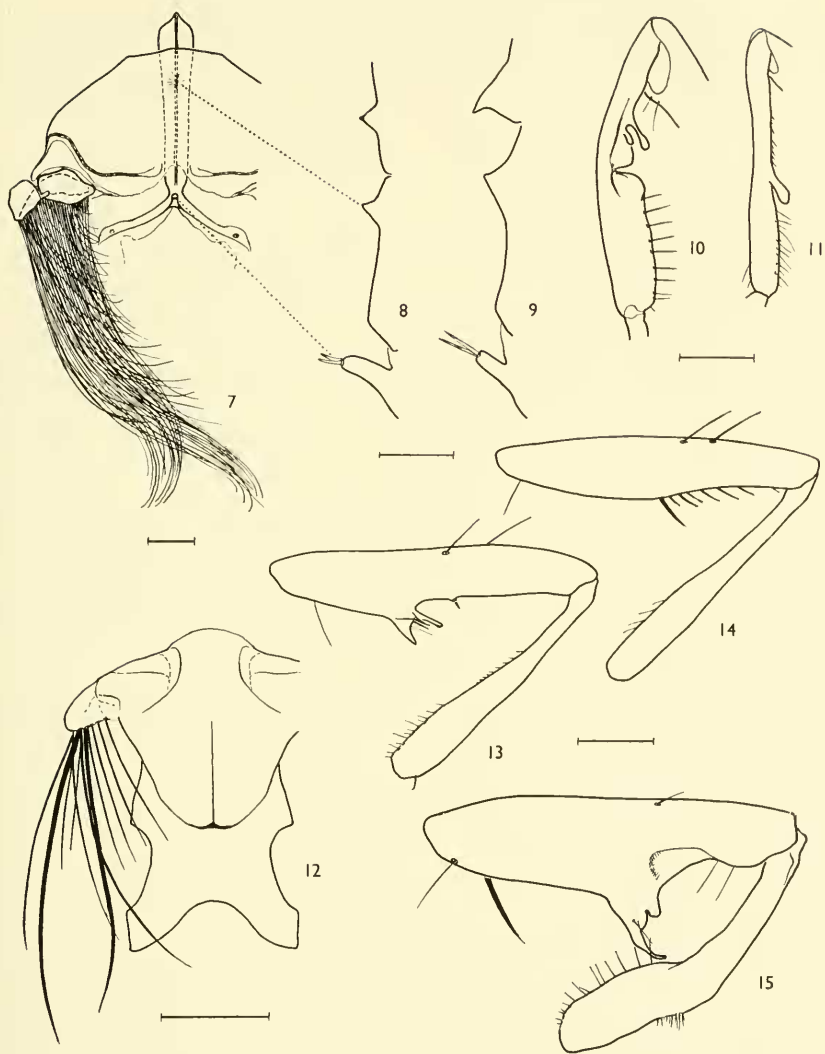


Fig. 7-8, *Themira japonica*. 7, abdominal sterna IV and V of male, ventral view; 8, abdominal sterna III to V of male, lateral view. Fig. 9, *T. leachi*, same as 8. Fig. 10, *T. japonica*, fore tibia of male, anterodorsal view. Fig. 11-14, *T. bifida*. 11, same as 10; 12, abdominal sterna IV and V of male, ventral view; 13, fore leg of female, posterior view; 14, fore leg of male, posterior view. Fig. 15, *T. japonica*, fore leg of male, posterior view. Scale equals 0.2 mm.

1915, and *T. arctica* (Becker), 1915. *Themira bifida* n. sp. can be easily distinguished from these species, in the male sex, by the conspicuous bifid ventral process on the fore femur and, as far as known, by the absence of a pair of spines on the fifth abdominal sternum.

Themira japonica Zuska, new species

Fig. 4, 5, 7, 8, 10, 15

♂ ♀. Brownish black, shiny, moderately large species 4.1 to 4.4 mm long. Head blackish, globular. Frons strongly tapering towards fore edge, mostly black and shiny but dull and slightly paler anteriorly, with sparse, minute hairs on orbits. Face brownish, facial carina distinct, yellow. Peristoma yellowish anteriorly, darkened posteriorly, narrow, its width less than depth of third antennal segment, its lower margin convex, following lower margin of eye. Occiput black, slightly pruinose. Chaetotaxy: 1 *or* (long and strong), 1 *oc*, 1 *vti*, 1 *pvt*, about 10 peristomal bristles; *vte* absent. Antenna yellowish red, rather small, its apex reaching middle of length of face; third segment along mesial surface about 1.2 times as long as depth, slightly paler basally; arista bare, black, shiny, only moderately thickened basally.

Thorax entirely black. Mesonotum rather densely pruinose, black hairs more or less arranged into acrostichal, dorsocentral and intra-alar rows. Pleura shiny, without pruinosity, except for fore part of hypopleuron. Scutellum and postnotum pruinose. Chaetotaxy: 1 *dc*, 1 *h* (well developed, strong), 2 *n* (anterior almost as long and strong as posterior), 1 *pal*, 1 *ap sc* (about 2.5 times as long as scutellum, strong); *m*, *sal* and *la sc* absent.

Legs: *Male*. Fore coxa and trochanter yellow; fore femur (fig. 15) black except for yellow narrow proximal part and ventral part of distal $\frac{1}{3}$, bearing long posteroventral hair basally, long and rather strong anteroventral bristle sub-basally, with large bifid protuberance below middle, its proximal part very long, protruding into a rather thin point sharply bent posteriorly and bearing a few bristles, distal part short, compressed anteroposteriorly, rounded apically; fore femur subapically with row of about three very thin posteroventral hairs; fore tibia (fig. 10, 15) forming a strong sigmoid curve, yellow proximally, blackish distally, with group of processes and protuberances, one of these long, spoonlike, one shorter, pointed, both directed anterodistally; thickened distal part of tibia with rather regular ventral row of about 10 bristles, and with sparse brush of anterodorsal hairs below middle; fore tarsus not thickened, entirely darkened, length ratio of tarsal joints 5.4 : 2.3 : 2.0 : 1.0 : 1.3. Middle coxa bearing long yellow process laterally; middle leg darkened, with yellow trochanter, base of femur, knee, apex of tibia and pale yellow base of tarsus; ventral pilosity of first 2 tarsal segments sparse, dark, hairs not modified into scales. Hind leg darkened, with yellow trochanter lacking mesial tubercle, yellow base of tibia, knee, and apex of tibia; tibia anterodorsally with a longitudinal, but slightly oblique, impression enclosing indistinctly delimited osmeterium, the length of which is about $\frac{1}{2}$ as great as depth of tibia beyond osmeterium, bearing anterodorsal row of shorter bristles and sometimes 1 or 2 long anterodorsal bristles in proximal $\frac{1}{2}$, and 1 long anteroventral bristle at $\frac{2}{3}$ of its length; anterodorsal impression ventrally limited by anterodorsal gibbosity bearing rather dense erect hairs. *Female*. Legs darkened, except for yellow fore coxa, all trochanters, bases of middle and hind femora, all knees, all tibial apices, and base

of middle tarsus; fore femur without ventral bristle, middle and hind tibiae each with anteroventral bristle at $\frac{2}{3}$ of length.

Wing 3.0 to 3.3 mm long, very slightly tinged with grey, with greyish venation; alula with distinct posterodistal lobe, entirely covered with microtrichia. Halter yellow.

Abdomen black, shiny, without macrochaetae. *Male*. Abdominal sterna (fig. 7, 8) bearing moderate median protuberances, fifth sternum greatly reduced, with fingerlike protuberance bearing 2 spines. Hypopygium as in fig. 4 and 5.

Holotype: Male from Japan, Hokkaido, Wakkonai, 31.vii.1958; S. Takagi, collector; in EIHU.

Paratypes: Labeled as the holotype, 1 ♂ (author's collection).—Hokkaido: Rebun, 1.viii.1958, 2 ♂, 1 ♀ (K. Kamijo, EIHU and author's collection).—Hokkaido: Sapporo, 30.v.–7.vi.1960, 1 ♂, 3 ♀ (S. Takagi, EIHU and author's collection).

Derivation of name: From the present known distribution.

Themira japonica n. sp. apparently is extremely closely related to *T. leachi* (Meigen), 1826. In fact, the surprising morphological similarity of these 2 species, together with their characteristic geographical distribution, leave little doubt that they are vicariant species resulting from late allopatric speciation.

The most conspicuous characters distinguishing *T. japonica* n. sp. from *T. leachi* are as follows:

	<i>T. japonica</i>	<i>T. leachi</i>
Humeral bristle	present	absent
Middle tarsus of ♂	dark with pale yellow base, ventral pilosity of 1st and 2nd tarsal segments sparse, dark, without hairs modified into scales	yellow, with 1st segment slightly darkened basally and distal part of tarsus sometimes very slightly darkened; ventral pilosity of 1st and 2nd segments white, more scalelike, very dense on 2nd segment
Mesial tubercle on hind trochanter	absent	present
Hind tibia of ♂	with longer pilosity, strong bristles and smaller osmeterium	with finer pilosity, weaker bristles and larger osmeterium
Wings	almost colorless	greyish
Abdominal sterna of ♂	with moderate protuberances (fig. 8)	with high protuberances (fig. 9)
Surstylus	wide (fig. 4)	narrow (fig. 6)

The definitely close phyletic relationship of *T. leachi* and *T. japonica* n. sp., which differ most strikingly from each other in the development of the humeral bristle, throws some light on the question of the supra-

specific classification of the genus *Themira*. This relationship particularly indicates the limited taxonomic value of the humeral bristle, which previously has been considered as a character of basic importance. Duda (1926) recognized several subgenera of *Themira*, of which the subgenus *Themira* s. str. included the species with developed humeral bristle, whereas those species which lacked this bristle were included in several other subgenera. However, the differences between Duda's subgenera are so vague (the exception being *Protothemira* Duda, 1926 = *Ortalischema* Frey, 1925 with elongate scutellum and fully developed basal scutellar bristles) that it appears impossible to recognize these taxa as subgenera. My opinion is that Hennig (1949) has chosen the best alternative when he recognized *Ortalischema* as a separate genus and the rest of *Themira* s. lat. in the sense of Duda as another genus, without further division at the subgeneric level.

Themira annulipes (Meigen), 1826

The range of *T. annulipes* is very wide, covering Europe (for examples of localities see Duda, 1926, and Hennig, 1949), Palaearctic Asia (Hendel, 1934; Soós, 1972; there is also a male from Kokand, Uzbek SSR, without further data, in ZMUH) and North America (Steyskal, 1943, 1965). Also, Brunetti (1910) recorded this species from several localities in India and Sikkim. Examination of several dozen Asiatic specimens identified as *T. annulipes* in BMNH, mostly by Brunetti and including specimens mentioned in his 1910 paper, revealed that the species in question is *Decachaetophora aeneipes* (Meijere), 1913. This seems to confirm the suspicion expressed elsewhere (Zuska, 1970) that *T. annulipes* is not distributed outside the Holarctic. However, the speculation that *Themira* is confined to the Holarctic (Steyskal, 1946; Zuska, 1970) is now proved incorrect because of the existence of an Oriental species, *T. bifida* n. sp.

Themira nigricornis (Meigen), 1826

The previously known range of *T. nigricornis* covers Europe (for examples of localities see Duda, 1926, and Hennig, 1949) and North America (Steyskal, 1946, 1965), but no record from Asia is available in the literature. There are 3 ♀ from Japan, Toyama, 4., 6. and 9.iv. 1960 respectively, collected by S. Takagi, in EIHU. Also, 4 ♂, 6 ♀ from the USSR, Irkutsk, collected by Ahnger, are in ZMUH.

Themira putris (L.), 1761

This sepsid is a synanthropic species widely distributed in the western part of the Palaearctic and in North America. Soós (1972) reports it also from Mongolia and Hennig (1949) from the Manchurian subregion. In ZMUH there is a female from the same locality in Manchuria, Charbin, 19.x.1910, collected by A. Luther.

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